Progress Report

Program Evaluation Unit
Legislative Finance Committee
August 21, 2015

College Readiness in New Mexico

Remediation Rates are Down, but More Can be Done to Improve College Readiness

Students required to take a remedial course in college are over three times less likely to graduate, expending considerable state and personal resources without gaining the benefit of a degree. The Legislature increased high school graduation requirements with the Class of 2013 and redesigned the higher education funding formula to incentivize outcomes in FY12. The percent of New Mexico high school graduates required to enroll in remedial courses during their first year at institutions of higher education has decreased from 52 percent in FY12 to 42 percent in FY14, though it is not yet clear how much of this decrease is due to improved preparation of high school graduates versus redesigned college placement assessments. Higher education institutions statewide have expanded the use of best practices to improve outcomes for remedial education, and the percent of all students taking remedial coursework has gone down significantly. However, New Mexico can still do more, including aligning high school graduation requirements with college expectations, encouraging cooperation between secondary and post-secondary institutions, continuing to improve college remediation outcomes, directly incentivizing high schools to improve the first year college performance of their graduates, and expanding programs designed to address the socioeconomic achievement gap.

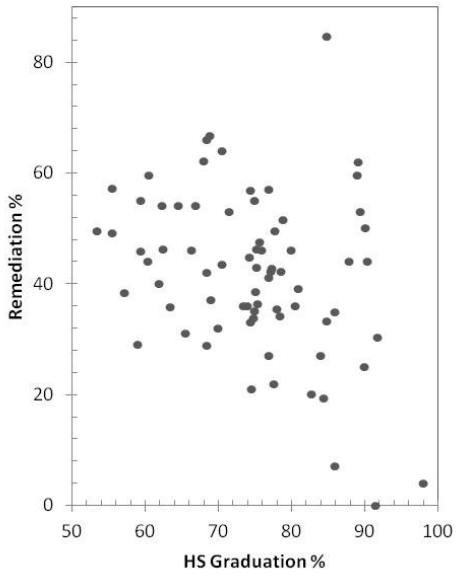
The Evaluation: The evaluation, *College Readiness in New Mexico,* (January 2014) assessed the status of New Mexico high schools at preparing students for college success, as well as the efforts of New Mexico higher education institutions to improve persistence for incoming freshmen requiring developmental education.

Progress Reports foster accountability by assessing the implementation status of previous program evaluation reports' recommendations and need for further changes.

New Mexico Legislative Finance Committee

HS Graduation and College Expectations Remain Unaligned

Chart 1. 2014 High School Graduation and College Readiness Not Aligned



Source: HED and PED Data

High school graduation rates have very little correlation with college remediation rates across the state. Chart 1 shows New Mexico high school graduation rates for the class of 2014 plotted against the percent of graduates who required college remediation in the fall. There is no statistically significant difference between high schools with high and low graduation rates in terms of remediation. This implies that high school graduation requirements are not aligned with college expectations across New Mexico. Section 22-13-1.1 NMSA 1978, enacted in 2003, requires the Public Education Department (PED) and the Higher Education Department (HED) to work together to align high school graduation requirements with college placement tests. As recommended in the 2014 evaluation, HED and PED are planning to study and assess the feasibility of aligning cut scores with high school graduation requirements.

College placement cut scores remain unaligned across the state. A 2009 report by the New Mexico Developmental Education Task Force, in collaboration with higher education institutions, recommended that institutions adopt common placement cutoff scores. The report concludes that students are better prepared for college in states that have common placement scores. However, cutoff scores still vary significantly by institution, including among branch campuses of the same institution. Table 1 shows all placement cut scores publicly available from institutions' websites or school catalogs. It is unclear how high schools can align their graduation requirements with college placement tests when there is a range of placement cut scores. Additionally, more than half of the institutions do not publicize cut scores. All institutions should clearly and accessibly publish cut scores so that high schools know what to prepare their students for.

Table 1. 2015 College Placement Cut Scores Not Aligned Across State

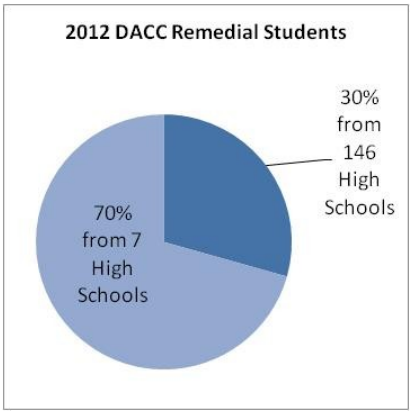
	SAT		ACT				
Institution	English	Math	English	Math	Other	English	Math
ENMU	440	460	18	23	Accuplacer		
ENMU-Ro		600	19	21	Accuplacer		66
Highlands			17	23	COMPASS		
NMSU	400	470-580	16	18-24	MPE		
NMSU-C			16	17-23	MPE		
UNM	450	510	19	22	COMPASS	75	55
CNM	330-460	440	16-22	22	Accuplacer	85-110	104
CCC	500	450	19	19	Accuplacer	85	109
DACC	400	470-580	16	18-24	COMPASS		
NMMI	490		18		COMPASS	70	
SJC					Accuplacer	85	104
SFCC	450	600	19	24	Accuplacer	80	80
SIPI			18	18	COMPASS		

Source: LFC Analysis of Institutions' Official Websites and Catalogs

Higher education institutions can do more to improve vertical articulation with feeder high schools. The 2009 task force reported that only 22 percent of higher education institutions cooperate strategically with feeder high schools to improve the preparation of their graduates. The 2014 LFC evaluation found over half of the incoming freshmen requiring remediation at the largest institutions come from 10 or fewer feeder high schools. Chart 2 shows over 70 percent of students taking remedial courses at Doña Ana Community College (DACC) come from just seven local high schools.

Higher education institutions should work with their feeder high schools to help prepare graduates to meet college readiness expectations. If institutions work with feeder schools, they can impact the performance of their incoming class, and thus, improve outcomes. For example, Alamogordo Public Schools has partnered with New Mexico State University-Alamogordo (NMSU-A) to promote college readiness across all grades, saying "college begins in kindergarten." The partnership builds vertical articulation between secondary and post-secondary education by offering automatic admission to NMSU-A for all high school seniors and offering NMSU-A student services, like advisement and test prep, on high school campuses at no cost to the district. Incidentally, Alamogordo High School had 14 fewer Class of 2014 graduates who required remediation than expected through correlation with their free or reduced-fee lunch (FRL) rate. HED plans to create a process within the next fiscal year for publishing an annual report that shows the percent of first time freshmen students from each high school and district that require remediation at New Mexico higher education institutions. Institutions should use this information to improve college readiness at feeder high schools.

Chart 2. Most DACC Remedial Students from 7 High Schools



Source: LFC Analysis

Developmental Education Outcomes Improving

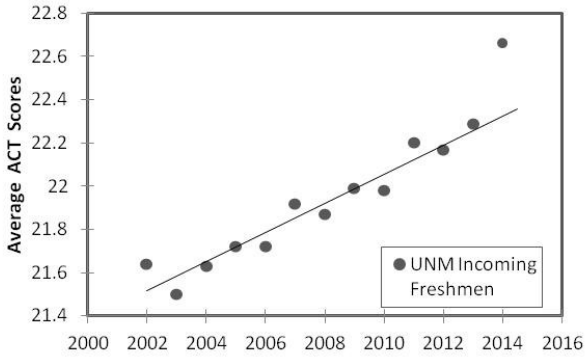
Higher education institutions have greatly expanded alternatives to traditional remediation across the state. In FY12, the higher education funding formula was redesigned to incentivize institutions to improve outcomes for student success. Institutions have since experimented heavily with alternatives to traditional remediation across the state and overall remediation rates have declined. This is most likely due to redesigns of placement and admissions standards, increases in alternatives to traditional remediation, improvements in effectiveness of student support services, and adjustments to remedial course pathways. For instance, Central New Mexico Community College (CNM) has implemented all of these practices, including lowering placement cut scores, to reduce the number of students enrolled in remediation from 33,279 in FY13 to 19,845 in FY15, a decrease of over 40 percent. This reduction results in students expending about $5 million less in tuition at CNM and could help students graduate and enter the workforce more quickly.

Institutions can redesign assessment procedures to reduce the number of students requiring remediation by lowering placement cut scores, implementing multiple assessment measures, actively promoting students who excel early, and raising admissions standards. For example, New Mexico State University (NMSU) uses a combination of placement exams and high school GPA to determine whether a student requires remediation, CNM promotes students out of remedial courses if faculty see ample course mastery in the first two weeks, and the average ACT scores of incoming freshmen at the University of New Mexico (UNM) have consistently increased over time, as shown in Chart 3. UNM redesigned admissions requirements for the incoming Fall 2014 class, and the jump in average scores can be seen in the chart. Remedial rates for UNM freshmen have decreased from 33 percent in FY12 to 22 percent in FY14.

Increased Efficiency of Dollars Spent

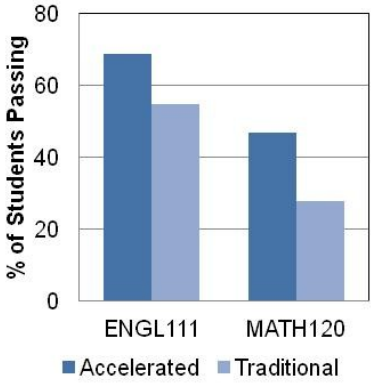
The average number of remedial courses per underprepared student is about 2 and the average cost to the state per course is about $240, so 13,000 fewer students taking remedial courses results in the potential for ***$6 million of public funding*** *being used more efficiently.*

Chart 3. UNM Freshman Class Improving



Source: UNM Data

Chart 4. DACC Improves 2010-14 Course Pass Rates with Accelerated Classes



Source: NMSU Data

Figure 1. NMSU Incorporating Remedial Branch Students onto Main Campus through Aggie Pathways

Source: NMSU

Institutions have experimented heavily with alternatives to traditional remediation, including: **co-requisites**, where remedial courses are paired with credit bearing courses and both are taught by the same or cooperating instructors for the same cohort of students; **self-paced modules**, where students master separate sections of a course at their own pace in computer labs and they can earn partial credit, pick up where they left off, and finish multiple remedial requirements in one semester if they work at an accelerated pace; and **refresher courses**, where students meet several hours a day for a couple weeks before the start of term. For example, the MaLL emporium model at UNM uses self-paced math modules in instructor and tutor supported computer labs to replace traditionally taught intermediate algebra. UNM has seen several benefits from MaLL since implementation, including a more efficient use of resources (MaLL costs $64 per student compared to $82 per student for traditional instruction), improved outcomes (82 percent of students pass the first MaLL module versus 35 percent passing the traditional course), and accelerated course completion (multiple credits can be completed in one semester). DACC uses accelerated co-requisite courses that combine two developmental and/or credit bearing courses into one semester by doubling class time, and participating students have increased their persistence and significantly increased their pass rates compared to traditional schedules, as shown in Chart 4. HED has developed a remediation success rate metric (percent of students passing a credit bearing course after completing a remedial course), and recommends that institutions develop and report similar measures pursuant to the Accountability in Government Act, Section 6-3A NMSA 1978.

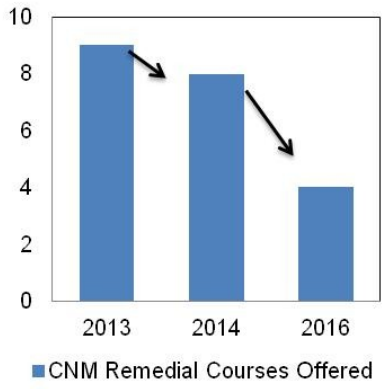
Student support services can be used to improve college readiness through academic advisement, degree pathways, tutoring services, learning communities, mentorship programs, resource centers, student groups, and more. For instance, New Mexico Institute of Mining and Technology (NMT) has research-themed freshman year learning communities where students live in the same residence halls and take courses and work on research projects together. Starting Fall 2016, NMSU will implement a program called Aggie Pathways to integrate students requiring remediation into student life and support services on main campus while they attend remediation at branch campuses. UNM's main tutoring center was visited at least once by 20 percent of students in FY13, and visits have nearly doubled since 2007.

Curricular changes can be used to reduce total remedial course load or adjust remedial pathways in order to improve persistence for students requiring remediation. CNM has used curricular changes to consolidate the number of remedial courses from nine to four by FY16 in order to eliminate total time in remediation and thus more quickly prepare students for college level courses. San Juan College is working in conjunction with a statewide higher education task force to explore how to more appropriately tailor the pathway of a student's required math course work to the student's degree pathway.

More Improvements to Remediation Should be Considered

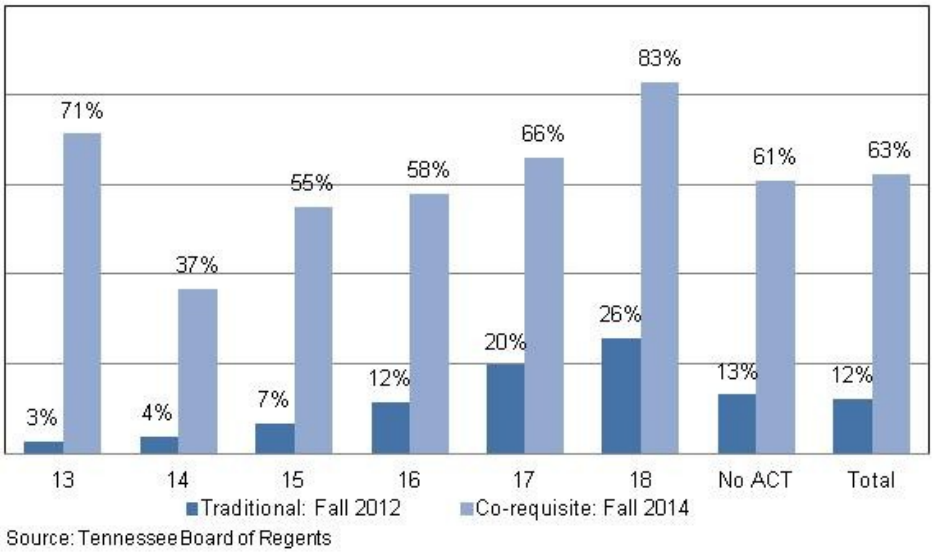
In spite of the many changes that have been made at higher education institutions to improve remedial outcomes, more can be done. The latest evidence for best practices from statewide implementation of remedial alternatives in the community college systems of Indiana, Tennessee, West Virginia, and Colorado has shown that a combination of co-requisites and math pathway alignment can improve remedial outcomes by factors of two to five. In Tennessee, pass rates in credit-bearing math courses increased statewide by a factor of five using this technique, regardless of ACT scores (implying, regardless of socioeconomic background), as shown in Chart 6. Replicating these results could make a real impact on closing the achievement gap in New Mexico, and so institutions should consider tailoring math curricula to students' degree pathways, illustrated in Figure 2. For example, social science majors may be better served by taking a rigorous statistics course in place of the traditional college algebra/calculus sequence. According to "What's Wrong With College Algebra" (Gordon 2008), 50 percent of students do not pass college algebra, and yet most degree pathways require it for graduation, even for those not in science fields. Further, remedial math courses in New Mexico are currently designed to prepare students for college algebra, even if their required math course is not college algebra. Required math courses and remedial math pathways could be more closely tailored to student degree plans. There is a New Mexico Math Summit Taskforce scheduled to meet later this year, where higher education institutions will discuss a statewide redesign of college math requirements and paths. Any redesign efforts should come amidst a consensus of institutions in order to facilitate articulation in the state.

Chart 5. CNM Streamlines Developmental Pathway



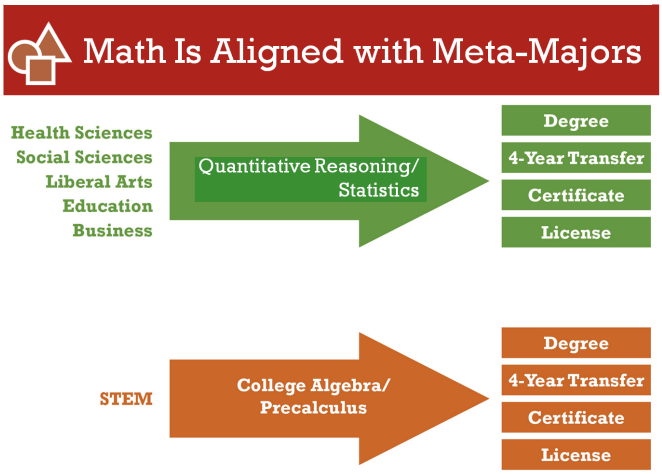
Source: CNM Data

Chart 6. Tennessee Gateway Math Pass Rates Quintuple Statewide Using Co-requisites and Math Pathways



Source: Tennessee Board of Regents

Figure 2. NM Should Redesign Math Pathways

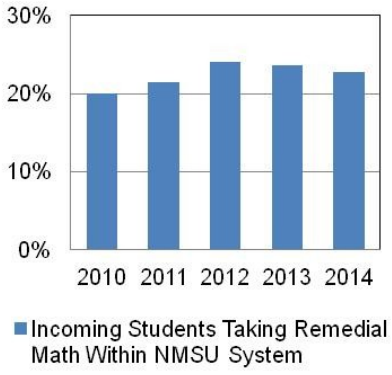


Source: Complete College America

Statewide Progress on College Preparation of High School Graduates Remains Unclear

The 2013 high school math curriculum redesign has not yet significantly improved college math readiness. Starting with the high school class of 2013, New Mexico students are required to complete four units of high school math for graduation. The percent of high school seniors taking math increased from 51 percent to 77 percent with the Class of 2013. The 2014 LFC evaluation anticipated this would improve college readiness, as students who take a math course their senior year are less likely to require remediation. However, data from NMSU shown in Chart 7 does not show a significant decline in the percent of incoming NMSU students requiring math remediation. There has also been no significant increase in the average ACT math score in New Mexico, as shown in Chart 8, though New Mexico students have closed the gap with the national average by 0.3 points since 2013. While the statewide remediation rate for first-time full-time students has gone down since 2012, it is not clear whether this is due to better prepared high school graduates or redesigned college placement assessments, and so the data should continue to be tracked. PED should include first year college performance in the A-F school grading system in order to incentivize high schools to pursue best practices like requiring senior year math, as recommended by the 2014 evaluation. Currently, the college and career readiness component in the A-F grading system is comprised of metrics that occur while a student is in high school, like dual credit and ACT scores. While these metrics are often correlated with college readiness, there is no component in the grading system that directly includes first year college performance, like remediation rates.

Chart 7. Percent of Incoming NMSU Students Requiring Remedial Math Unchanged



Source: NMSU Data

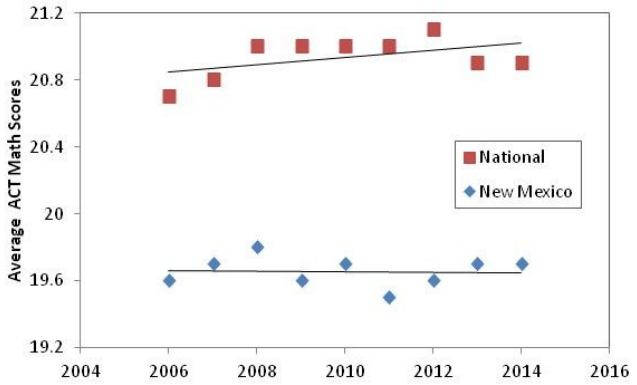
Dual credit should continue to be used strategically to improve college readiness. The 2014 evaluation found evidence that students taking dual credit in core courses like math and English have lower remediation rates than those taking dual credit courses in other subjects. Dual credit courses, therefore, can be an effective tool at improving college readiness when used for certain subjects. For instance, East Mountain High School (EMHS) encourages students to take dual credit course in core subjects, and has increased the average number of college credits earned per student since 2010 from 1.4 credits per graduate to 15.2. Their increase in dual credits is positively correlated with increased scholarships per student over the same time period. The percent of EMHS students receiving college scholarships, the amount of money in scholarships awarded, and the number receiving UNM Presidential and Regents scholarships doubled from 2010 to 2015. High schools should consider encouraging college bound students to thoughtfully select the subjects of their dual credit courses.

More Can be Done to Improve College Preparation for High School Students

New Mexico has a significant achievement gap in college readiness. Chart 9 shows a strong correlation between remediation rates of high school graduates and free or reduced-fee lunch (FRL) rates. This is clear evidence of the achievement gap between New Mexicans with different economic backgrounds. New Mexico schools can help reduce the achievement gap by improving the college readiness of underrepresented students. As of 2015, there are 54 schools and 14 school districts in New Mexico participating in the Advancement Via Individual Determination (AVID) program. AVID is "a national college readiness program targeting the least served students in the academic middle who have the capacity to succeed but need extra support and direction." AVID students have higher Advanced Placement (AP) credit rates and higher college acceptance and persistence rates than the national average. For example, Albuquerque Public Schools participates in AVID at eight high schools that have high rates of low-income, diverse, and mobile student populations. AVID students in APS are 78 percent Hispanic, 81 percent are eligible for free or reduced-fee lunch, and 23 percent are English language learners. In spite of these challenges, 94 percent of AVID students graduate high school and 46 percent of AVID students take AP courses, compared to the district average of 29 percent. High schools and districts should continue to experiment with programs to address the achievement gap, like hiring social workers and expanding credit recovery programs. For instance, Albuquerque High School pairs bilingual classes with English class in order to improve writing skills in both languages, West Mesa High School encourages peer mentoring between top student athletes and at-risk peers, Kirtland Central High School (KCHS) has implemented a faculty-designed college success course for 11th and 12th graders. PED and school districts have been implementing an Early Warning System (EWS) to improve outcomes for at-risk students through a tiered intervention system. EWS identifies at-risk students from tracking their attendance, behavior, and course progress, and PED recommends a list of effective interventions for a school to then use to help students identified by the system.

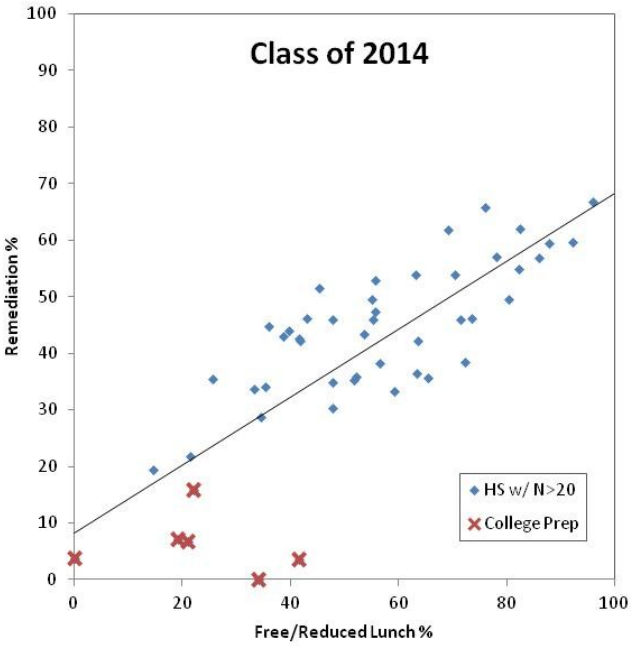
High schools focusing on college preparation outperform their peers in terms of college readiness. According to a 2014 study by the American Institutes of Research, data

Chart 8. Math ACT Scores in New Mexico Increasing but Improvement Not Significant



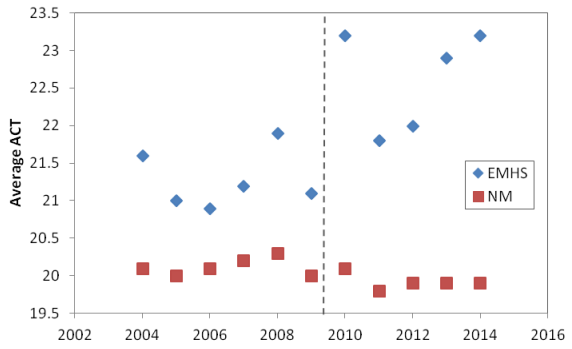
Source: ACT Data

Chart 9. College Readiness Achievement Gap



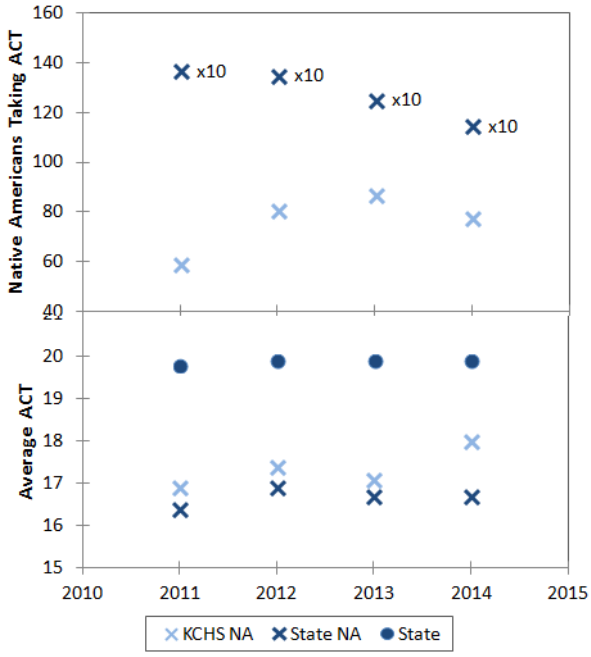
Source: LFC Analysis of HED and PED Data

Chart 10. Requiring Students to Take ACT Improves Scores at EMHS



Source: ACT Data

Chart 11. KCHS Improve College Readiness for Native American Students



Source: ACT Data

show a significant and causal link between early college high schools and increased college enrollment and degree attainment, regardless of demographics. Chart 9 shows that remediation rates of college preparatory high schools are all below what is expected given their FRL rates. Arrowhead Early College High School and Early College Academy have remediation rates several standard deviations below what is expected. A college preparatory high school provides a rigorous high school curriculum that focuses on preparing students for college level work.

The major components of a college preparatory curriculum typically include earning college credits, exercises in goal setting, ACT/SAT test prep, college explorations both online and in field trips, practice writing college admission letters, college cost calculations, and completing financial aid applications. While some of these practices have definitive costs, like field trips and ACT tests, many others do not, like goal setting and college admission essays. All schools should consider implementing college readiness components into their curriculum. For instance, since Kirtland Central High School (KCHS), which is 80 percent Native American and 95 percent FRL eligible, implemented college success courses in 2011, the average ACT score and the number of students taking the test have increased, as seen in Chart 11. In particular Native American students scored at least 0.5 points higher each year at KCHS compared to the state average for Native Americans. The gap between Native American ACT scores at KCHS and the state average has decreased 1 point, from 2.9 points to 1.9 points over the same time period. While the percent of Native Americans taking the ACT in the state has dropped by 16 percent since 2011 (1,369 to 1,146), it has increased by 32 percent at KCHS over the same time period (59 to 78). Additionally, the remediation rate of 2014 KCHS graduates is significantly lower than expected given their FRL rate (49 percent versus 65 percent). Alamogordo High School awards $100 to students for passing AP exams, costing a total of $7700 in 2014. From FY12 to FY14, the number of qualifying AP scores has increased at AHS by 57 percent. Students who pass AP exams are 50 to 100 percent more likely to graduate college in four years according to the College Board.

Recommendation	Status			Agency Response
	No Action	Progressing	Complete	
PED should revise the A-F school grading formula to include college readiness as measured by remediation rates and gateway course completion to incentivize best practices like intervening in senior year based on junior year performance.				To date, PED has not revised the A-F formula to reflect remediation rates. PED may consider doing so after the 2018 school year when the A-F system includes 3 years of PARCC data and had fully reviewed student readiness for college based on PARCC results.
PED should determine if redesign requirement for four units of high school math has significantly improved college math readiness.				At this time, PED has not develop plans related to this recommendation.
HED and PED should align high school graduation requirements with college admissions criteria.				PED and HED will review PARCC data as a way to explore college readiness. HED will compile, verify, and conduct a statewide comparison matrix cut score study, and review the findings with PED to assess the feasibility of cut score alignment.
HED and PED should continue to examine dual credit participation's impact on improved developmental education outcomes.				PED and HED have begun discussing dual credit and its impact on student outcomes.
HED should annually publish first-year reports on the department's website, detailing the postsecondary performance of entering freshmen who graduated from New Mexico high schools.				HED has begun compiling a first-year report on college readiness by high school. The report is not yet published but LFC staff have seen the data.
HED should monitor how changing the higher education funding formula to reward at-risk graduation rates has affected outcomes.				HED is tracking this and requires several years of stability and data collection within the funding formula.
HED should update their database on developmental education strategies by postsecondary institutions.				HED has conducted data analysis on remediation class success rates. HED will continue to compile and analyze data for this metric.
Higher education institutions should expand alternatives to traditional remedial education in order to increase performance and decrease total credit hours taken for developmental courses.				Institutions have made significant strides in expanding alternatives and analyzing data on success rates. HED is also tracking this data.
Higher education institutions should develop measures as part of the Accountability in Government Act to report results of developmental education outcomes.				HED plans to bring a proposal to the University/College Associations recommending this measure before the end of the next Fiscal Year.
Higher education institutions should focus on college readiness at feeder high schools.				LFC will continue to explore this issue in future evaluations.